ROLE OF ICT IN DEVELOPMENT OF SMART CITIES

Group 3

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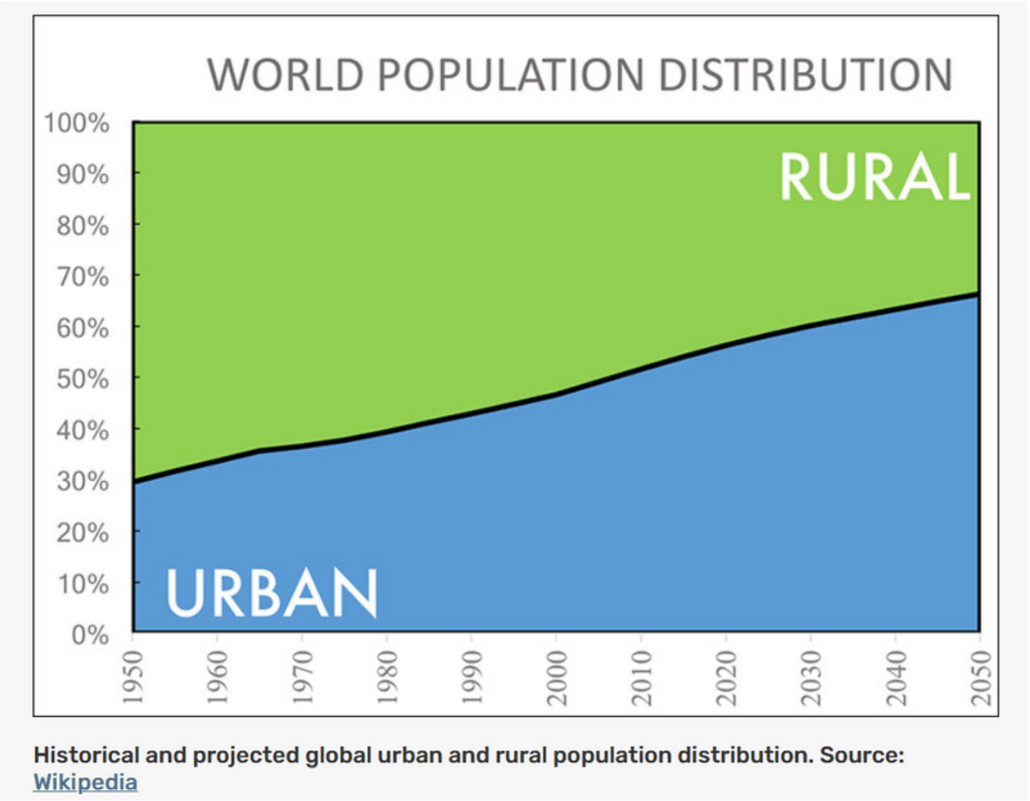
Outline

- Introduction
- About Smart city
- Objectives
- Economic and Social conditions
- Strengths
- Vulnerabilities
- External Oppurtunities
- Threats and Attacks
- Expected Results
- Methodologies to improvise Smart cities
- Fundamental Technologies
- Application of ICT in Smart cities
- Management of Smart cities using ICT
- Using ICT principles in building Smart cities
- Smart Cities Mission in India
- Achievements
- Impact of ICT on Smart cities
- Conclusion
- References

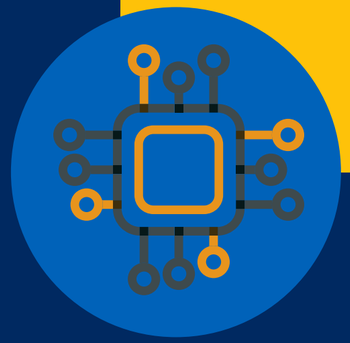
Introduction

“The world’s cities are relentlessly growing. It is predicted that by 2050, 64% of the developing world and 86% of the developed world will be urbanized”



Historical and projected global urban and rural population distribution. Source: Wikipedia

Smart City



- A smart city is an ultra-modern urban area that addresses the needs of businesses, institutions, and especially citizens.
- The main goal of a smart city is to optimize city functions and promote economic growth while also improving the quality of life for citizens by using smart technologies and data analysis.

ROLE OF ICT

ICT in the Smart City is used to enhance the quality, performance, and interactivity of urban services, reduce costs and resource consumption, and improve contact between citizens and city stakeholders.

Objectives

- Optimized management of energy resource
- Decentralized energy production
- Safety and Security
- Environment and Transportation
- Educational facilities
- Tourism

Project Context

Economic & Social Conditions

- Citizens or inhabitants of the city play a major role in developing smart cities through ICT.
- E-governance is the most fundamental component that has to be considered to make a city smart.
- It facilitates citizen involvement in governance using ICT.
- Links citizens, businesses, and government institutions in a seamless network of resources, capabilities, and information exchange.

Fig 2.

Fig 3.

- Smart cities need citizens to be continuously connected in order to share their knowledge and experience.
- Awareness and education are crucial to making citizens understand the role ICT plays.
- A country's adoption of a new technology eventually facilitates economic growth and improves the perceived standard of living.
- Developing the urban management to meet citizens' current needs and demands, and improve their quality of life through ICT-based Smart city services can be considered to be a successful implementation of the project.

Fig 4.

VS

STRENGTHS

VULNERABILITIES

Strengths

- High potential for job opportunities
- Creation of safer communities
- Improved urban transportation
- Optimization of time in hospital and public service lines
- Evolution towards the Internet of Things (IoT)
- Implementation of new business opportunities
- Creation of services that respond more effectively to the needs of citizens
- Improving the environment through various systems

Vulnerabilities

- Lack of investment
- High energy consumption
- Need of smart citizens
- Privacy issues
- Data security issues
- Prone to cyber-attack
- Interoperability of multiple technologies
- Larger technological gaps
- Considerable increase in electronic waste

EXTERNAL OPPORTUNITIES

Government:

- Smart buildings, smart grid
- Smart utilities such as CCTV,GPS tracking
- Incidence-response systems for reducing crime

Economy:

- Gives rise to more business opportunities and investment of innovative solutions.

Smart citizens:

- Higher awareness of technologies and power saving features.
- Increasing the quality of life through virtuous citizens.

contd..

IoT management:

- Promotes data availability and in sync with the various other components of a smart city.

Smart Mobility:

- Reduction in traffic jams.
- Reduction in environmental and noise pollution due to energy consumption.

Sensor networks and human sensors:

- Flood monitoring Disaster and incident management

Threats & Attacks

- Security and privacy breach
- Data and identity theft
- Man-in-the-middle
- Device hijacking
- Distributed Denial of Service (DDoS)
- Permanent Denial of Service (PDoS)

Expected Results

1

Transportation

Traffic flows will be monitored and optimized

2

Jobs

Advancement in technology plays key role in increasing job opportunities

3

Energy

Integration of renewable energy & rise of intelligent systems increases efficiency

Expected Results

4

Citizens

Spread of smart technology transforms society

5

Services and Security

Safer society established with increase of fully automated services

6

Eco Friendly

Increased use of Renewable sources of energy minimizes pollution

Methodologies to improvise smart cities

1

Broadband infrastructure

Increase of wireless network reduces the need for physical components

2

E-services

Contact-less delivery
Avail services from any part of the world with ease

3

Open government data

Free usage of information
Can be reused and re-distributed

4

E-governance

Quick efficient and transparent process, provides at-most accuracy

5

Sustainable Infrastructure

Increases resource efficiency in all possible domains

contd..

Fundamental Technologies

Ubiquitous computing

This technology includes heterogeneous devices that communicate directly through heterogeneous networks.

Big-Data

This helps to improve the living standards for all entities of a smart city.

Networking

This technology allows multiple devices to connected.
Modern networks (Wireless networks) can be used in smart buildings, smart water networks, Intelligent transportation etc..

contd..

Cloud Computing

Cloud computing technologies enables easy network access to data resources shared.

Cyber Security Architecture

Privacy of government and citizens is a major challenge in smart cities. These also include sensitive issues like people’s safety.

Combines real-time data from connected assets, objects, and machines to improve decision making

HOW IS ICT APPLIED IN SMART CITIES?

Citizens will be able to engage and interact with smart city ecosystems through mobile devices and connected vehicles and buildings

By pairing devices with data and the infrastructure of the city, it is possible to cut costs, improve sustainability and streamline factors

How are Smart Cities Managed?

Absolute Scalability, Modularity, and Compatibility

Citizen Relationship Management

High Data Security

Automated Information and Working Systems

Public-Private Sector Integration

Building a smart city using ICT principles

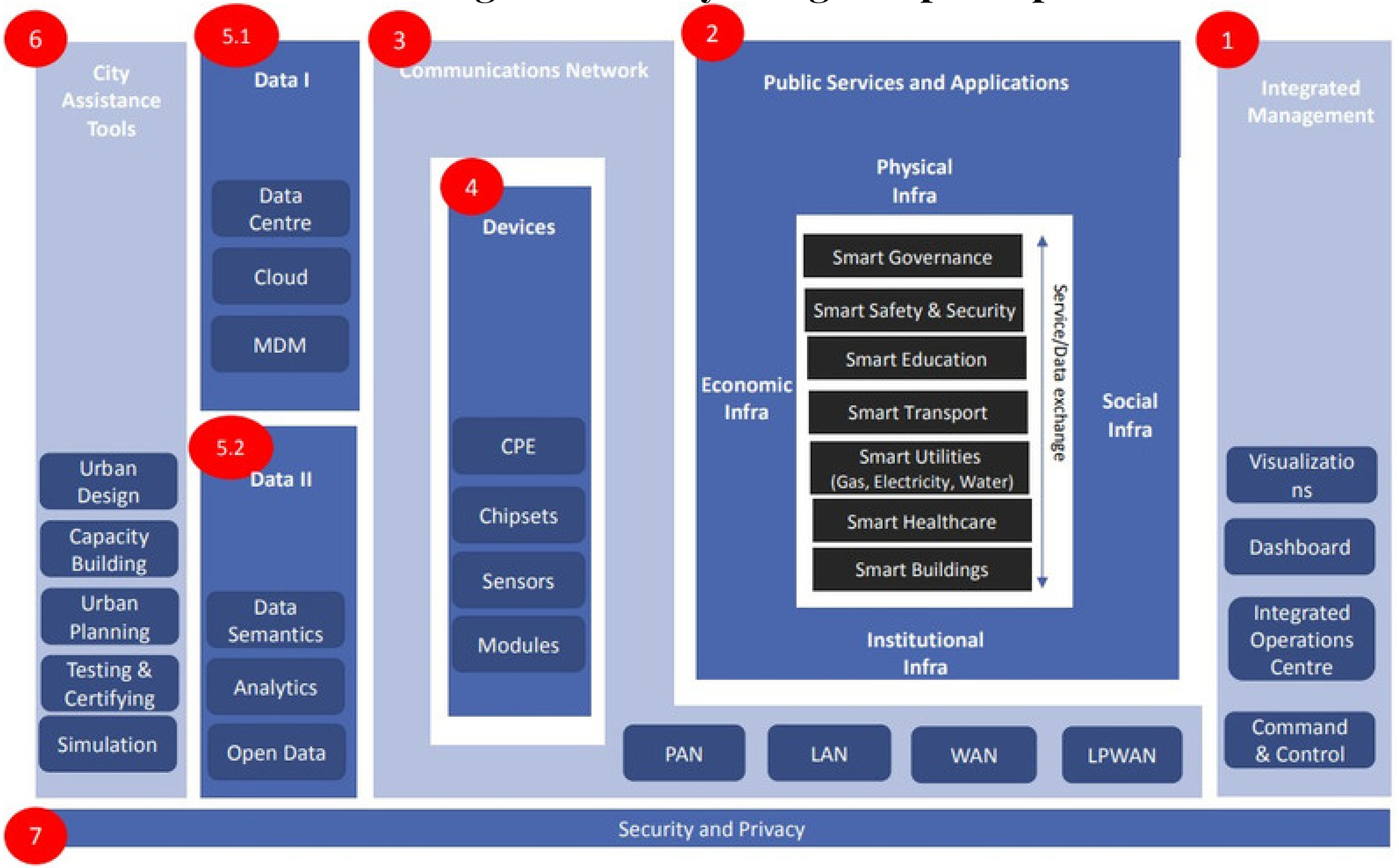


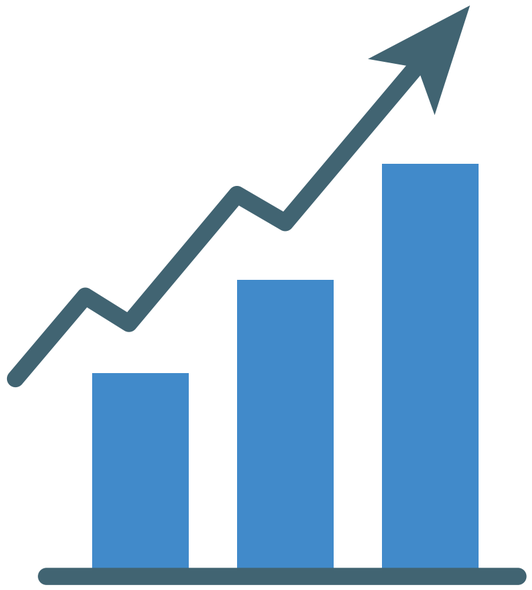
Fig 5.

Smart Cities Mission in India

The 100 Smart Cities Mission in India was launched by Prime Minister Narendra Modi on June 25, 2015.
The Union Ministry of Urban Development is responsible for implementing the mission in collaboration with state governments - expected to complete between 2019 and 2023.

Fig 6.

SOME ACHIEVEMENTS...



1. Tirupati is nurturing local arts and crafts through digital training. It has created a digital platform which allows artists to share designs with crafts persons.

2. Surat is also providing amenities such as better roads, footpaths, utility crossings, median parking, hawking zones, art galleries, children’s play areas under the Mission and increasing its green cover along a canal.

contd..

3. Thiruvananthapuram has set up three smart anganwadis, with renovated buildings, upgraded activity areas, and CCTV surveillance.

4. The Tumakuru police have developed a mobile app called Lockdown House Monitoring to improve security in the city, which citizens can download and seek police help.

Impact of ICT on Smart Cities

- Aims to enhance citizen’s quality of life.
- Ensure public safety, healthcare and education.
- Promote an economic growth by generating employment
- Prepare preventive and counter measures for quick incidence response.
- Utilize clean energy to fill today’s needs without harming the future.

Conclusion

- The advantages of a ICT in developing smart cities boost quality of citizen's life while also providing the government with more resources to further develop the city.

- Advantages of a smart city outweigh the disadvantages.

- Overall, smart cities are the way to go because of their complexity, which allows them to meet a wide range of qualitative aspects in a modern civilization.

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Fig 7.